

L 38432-66

ACC NR: AP6019579

Mechanical working of the alloys containing up to 30% of the alloying additive was analogous to that commonly used for molybdenum. The dependence of the electromotive force of the thermocouples on temperature for different alloys of molybdenum and rhenium was determined up to 1800°C. A platinum-platinum rhodium thermocouple was used as a control. Results are exhibited in a series of curves. The thermoelectric and mechanical properties of the thermocouples are listed in several large tables. It is concluded that thermocouples made of molybdenum-rhenium alloys can be used for temperature measurements in hydrocarbon media, for a limited time, not exceeding 1 to 2 hours, at temperatures up to 1500°C. Orig. art. has: 5 figures and 4 tables. [06]

SUB CODE: // 20 SUBM DATE: none/ ORIG REF: 006/ OTH REF: 003
09

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L 39723-66 ENT(d)/ENT(r)/ENT(x)/ENT(h)/ENT(v)/ENT(l)/ENT(l)/ETI IJP(c) JD/JG/

ACC NR: AP6007163

SOURCE CODE: UR/0115/65/000/012/0028/0030

GD-2

AUTHOR: Danishchevskiy, S. K.; Smirnova, N. I.

22
B

ORG: none

TITLE: Furnaces for calibrating metal thermocouples at 2000-2500C

SOURCE: Izmeritel'naya tekhnika, no. 12, 1965, 28-30

TOPIC TAGS: thermocouple, laboratory furnace, electric furnace / VP-5367
furnace 10

ABSTRACT: As modern W-Mo-Re thermocouples operate at temperatures of 2500C and higher, the old Soviet-made PVG-349 calibrating furnace with its upper limit of 2000C has become inadequate. Its modernization (new trademark VP-5367) is described; it includes a larger (18-mm diameter, 220-mm long) working cavity, neutral gas (argon) atmosphere, and a better (water) cooling of current leads;

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UDC: 536.532.089.6

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also, a better arrangement of the graphite heating elements, better flange gaskets, and more favorable conditions of operation of the optical pyrometer enhance the quality of the modernized furnace. Its consumption is 4.5 kva; 30--40 min are required to heat the furnace to 2200C (450 amp, 10 v); changing temperature through 100C takes 10 min. Orig. art. has: 3 figures.

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 002

Card 2/2 *HS*

AUTHORS: Florianovich, G. M., Kolotyrkin, Ya. M., SOV/20-120-4-43/67
Smirnova, N. K.

TITLE: The Influence of Nickel Upon the Electrochemical and Corrosion
Behavior of Steel (Vliyaniye nikelya na elektrokhimicheskoye
i korrozionnoye povedeniye stali)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 4,
pp. 845 - 848 (USSR)

ABSTRACT: In this paper the influence exercised by nickel on the behavior
of steel in the domain of passivation is investigated by means
of the potentiostatic method of measuring polarization curves;
the experiments were carried out with steels of the types
Kh22T, Kh 22N14T and Kh 2CN6ST. Measurements were carried out
at 20° in a 0,1 n-solution of H₂SO₄ in a nitrogen atmosphere.
The velocity of the dissolution of steel Kh 22T depends on the
potential in rather a complicated way. The behavior of steel
at different potentials is described in short. The minimum
velocity of steel dissolution is within the potential range of
from 0 to 0,500 V. Also the other types of steel investigated
showed similar dependence of dissolution velocity on the

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Corrosion Behavior of Steel

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potential. The addition of nickel decreases the dissolution velocity in all potentials that are more negative than + 1,200 V. The velocity of dissolution systematically decreases within the range of passivation in the case of an increase of the nickel percentage in steel. The addition of nickel has almost no influence upon the position of the curve which characterizes the over voltage of hydrogen. To convert steel into the passive state and thus also to increase its resistance to corrosion the stationary potential in the case of absent external polarization must be shifted towards the positive side, up to values which are more passive than the passivation potential. Such a shift can be brought about by the increase of the over voltage of the anodic reaction and also by increase of the total velocity of the depolarizing cathodic reactions. The authors decreased the over voltage of hydrogen by facing a small quantity of platinum upon the steel surface. Similar results were obtained by introducing atmospheric oxygen into the solution. The degree of passivation of the surface of a steel with given composition is a function of the potential and in the cases described does not depend on the method of maintaining this potential. A shift

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of the potential by a change in the chemical composition of the steel can considerably change the degree of its passivation with a given potential. In conclusion, the authors thank A.A.Babakov for having placed the steel samples at their disposal. There are 1 figure, 1 table, and 4 references, 3 of which are Soviet.

PRESENTED: January 10, 1958, by A.N.Frumkin, Member, Academy of Sciences, USSR

SUBMITTED: October 9, 1957

1. Steel--Corrosion
2. Steel--Electrochemistry
3. Steel--Passivity
4. Nickel--Electrochemistry

Card 3/3

36

PHASE I BOOK EXPLOITATION

SOV/5256

Gerasimov, Valentin Vladimirovich, ed., Candidate of Chemical Sciences.

Korroziya reaktornykh materialov; sbornik statey (Corrosion of Nuclear-Reactor Materials; a Collection of Articles) Moscow, Atomizdat, 1960. 284 p. 3,700 copies printed.

Ed.: A.I. Zavodchikova; Tech. Ed.: Ye.I. Mazel'.

PURPOSE: This collection of articles is intended for mechanical and metallurgical engineers as well as for scientific research workers concerned with the construction of nuclear reactors.

COVERAGE: The water corrosion of various types of stainless steel and alloys under high pressures and temperatures is investigated from the point of view of the use of these materials for the construction of nuclear reactors. Attention is given to the following: the use of oxygen for protecting steel against corrosion, the behavior of steel in high-temperature

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Corrosion of Nuclear- (Cont.)

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water with various compositions, factors of metal stress corrosion, intergranular corrosion, the mechanism of corrosion cracking, and the corrosion resistance of aluminum and zirconium alloys. Conclusions based on test results are included. No personalities are mentioned. Most of the articles are accompanied by references. Of 238 references 97 are Soviet.

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AND ELECTROCHEMICAL CORROSION AT
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YEROFEYEV, N.S., red.; ZLOTNIKOV, I.M., red.; LESIK, N.P., red.;
NIKOLAYEVSKIY, N.M., red.; SHIRKOVSKIY, A.I., red.
SMIRNOVA, N.K., ved. red.; ROZOVA, S., tekhn. red.

[Some problems in the development and operation of gas and
gas-condensate fields] Nekotorye voprosy razrabotki i eks-
pluatatsii gazovykh i gazokondensatnykh mestorozhdenii.
Moskva, 1962. 91 p. (MIRA 16:10)

1. Institut tekhnicheskoy informatsii i ekonomicheskikh is-
sledovaniy po neftyanoy i gazovoy promyshlennosti.
(Gas wells) (Condensate oil wells)

SMIRNOVA, N.K., SUSLOVICH, N.I.

Gas and gas-condensate fields; Lac pools. Gaz. delo no.10:71-72
'63. (MIRA 17:4)

SMIRNOVA, N. K.

Gas and gas condensate fields of Shebelinka. Gaz. delo no. 11:
54-57 '63. (MIRA 17:5)

SMIRNOVA, N.K.; SUSLOVICH, N.L.

Gas and gas condensate fields of the Netherlands. Gaz. delo no.12:
48-51 '63. (MIRA 17;10)

...ANON, Vol.

Karadag gas and gas condensate fields. Gas. del: no.9:
50-55 '63. (MERA 17:12)

USSR / Physical Chemistry. Crystals.

B-5

Abs Jour : Ref Zhur - Khimiya, No 6, 1957, 25836

Author : N.L. Smirnova

Title : Structural Types with Most Densely Packed Atoms. Possible Structural Types of AB_3 Composition.

Orig Pub : Kristallografiya, 1956, 1, No 2, 165-170.

Abstract : Structural types of binary compounds of the composition $B:A > 3$, in which the atoms A and B together make up a cubic, hexagonal, or mixed densest packing, are discussed. It is supposed that only such structural types are possible, in which the A atoms are surrounded only by B atoms, and each B atom has at least one A atom within its coordination sphere. The possible structural types, in which each B atom is surrounded with 4 A atoms (composition of AB_3 compounds), are deducted. One of the two surmised variations of the structure of ϵ - Cu_3Sn was found experimentally (RZhMet, 1956, 7823).

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SMIRNOVA, N.L.

Types of structures with close-packed atoms. Possible types of structures with the composition AB. N. L. Smirnova (M. V. Lomonosov State Univ., Moscow). *Kristallografiya* 1, 603-6 (1956).—Closest packings in which each A atom is surrounded only by B atoms and each B atom has 3 A atoms in its coordination sphere were examined. Two types correspond to cubic and hexagonal packings. The respective structures are: tetragonal, space group $I4/m$, $a = a_{\text{cub.}} (5/2)^{1/2}$, $c = a_{\text{cub.}}$, $Z = 2$; A in $2(a)$, B in $8(h)$, $x = 0.4$, $y = 0.2$ and monoclinic, $C2/c$, $a = (4a_{\text{cub.}}^2 + a_{\text{hex.}}^2)^{1/2}$, $b = a_{\text{hex.}} (3)^{1/2}$, $c = (4a_{\text{cub.}}^2 + a_{\text{hex.}}^2)^{1/2}$, $\beta = 87^\circ 40'$, $Z = 4$, A in $4(c)$ with $y = 1/2$, B_I in $8(f)$ with $(x, y, z) = (0.1, 1/2, 0.1)$, B_{II} in $8(f)$ with $(x, y, z) = (0.3, 1/2, 0.3)$.
A. L. Mackay

AUTHOR: Smirnova, N.L.

70-3-2-19/26

TITLE: On Structure Types with Close-packed Atoms. (O strukturnykh tipakh pri plotneyshey upakovke atomov) III. Possible Structure Types with the Composition AB_6 (Vozmozhnyye strukturnyye tipy pri sostave AB_6)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 2, pp 232-235 (USSR).

ABSTRACT: The types which can be identified are as follows:

Space group $R\bar{3}$ $a_r = a_k\sqrt{3/2}$; $\alpha = 99^\circ 36'$; $a_{\text{hex.}} = a_k\sqrt{7/2}$,
 $c_{\text{hex.}} = a_k\sqrt{3}$; $n=1$; 3A in 3(a); 18B in 18(f) positions
 with $x = 5/21$, $y = 4/21$, $z = 2/3$. Example $\text{NiSnCl}_6 \cdot 6\text{H}_2\text{O}$.

(Notation given earlier ibid. 1956, Vol 1, pp.165-70 and 1956, Vol 1, pp 502-5) This structure is based on cubic close packing.

Space group $C2/c$; $n=4$, $a = (4c_{\text{hex.}}^2 + a_{\text{hex.}}^2)^{1/2}$;
 $b = a_{\text{hex.}}\sqrt{3}$; $c = (9a_{\text{hex.}}^2 + c_{\text{hex.}}^2)^{1/2}$; for $c/a = 1.633$,

$\beta = 78^\circ 27'$. A in 4(e) with $y = 1/12$; all B atoms in 8(f) with parameters (x,y,z) of (4/7, 11/12, 5/28), (1/7, 7/12, 3/28),

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On Structure Types with Close-packed Atoms

(5/7, 5/12, 1/28). This structure is based on hexagonal close packing. It repeats after 14 layers.

Space group C2/c; $n=8$, $a=7a_{\text{hex.}}$, $b=a_{\text{hex.}}\sqrt{3}$, $c=(c_{\text{hex.}}^2 + a_{\text{hex.}}^2)^{1/2}$

where $a_{\text{hex.}}$ and $c_{\text{hex.}}$ are the identity periods for four-layer close packing of one sort of atom; $\beta=72^\circ 58'$ for

$c_{\text{hex.}}/a_{\text{hex.}} = 3.266$. The A atoms are in the 4(c) and 4(e) positions with $y = 5/12$; B atoms are in 8(f) positions,

B_1 with $x = 1/28$, $y = 3/4$ and $z=0$, B_2 with $(3/28, 1/4, 0)$, B_3 with $(5/28, 3/4, 0)$, B_4 with $(2/28, 11/12, 1/4)$, B_5 with $(4/28, 5/12, 1/4)$ and B_6 with $(6/28, 11/12, 1/4)$. This

structure has 28 layers.

There is also a mixed type of packing with 20 layers and space group c2/c; $n=8$, $a=5a_{\text{hex.}}$, $b=5a_{\text{hex.}}\sqrt{3}$, $c=(a_{\text{hex.}}^2 + c_{\text{hex.}}^2)^{1/2}$;

$\beta = 72^\circ 58'$ for $c_{\text{hex.}}/a_{\text{hex.}} = 3.266$. A_1 atoms are in 4(c) and

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On Structure Types with Close-packed Atoms

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. and A_2 in 4(e) with $y=7/12$. B atoms are all in 8(f) with parameters $(1/20, 1/4, 0), (3/20, 3/4, 0), (1/10, 1/12, 1/4)$ and $(1/5, 7/12, 1/4)$.
Acknowledgments to Academician N.V. Belov and Professor G.B. Bokiy.
There are 4 figures and 4 references, 3 of which are Soviet and 1 English).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni
M.V. Lomonosova (Moscow State University imeni
M.V. Lomonosov)

SUBMITTED: May 20, 1957

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70-3-3-20/36
 AUTHOR: Smirnova, N.L.
 TITLE: ~~On the Structural Types for Close Packed Atoms~~
 Possible Structure Types for the Composition AB_{12}
 (O strukturnykh tipakh pri plotneyshey upakovke atomov.
 Vozmozhnyye strukturnyye tipy pri sostave AB_{12})
 PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 3, pp 362 - 364
 (USSR).
 ABSTRACT: Earlier papers ibid. Vol 1, p 165: Vol 1, p 502;
 Vol 3, pp.232-5.
 Each A atom is surrounded by 12 B atoms and each B has only one
 A next to it. Only one type, based on cubic close packing
 has been found, namely:
 Space group $R\bar{3}$; $a_{rh} = 1.581 a_k$; $\beta = 107^\circ 28'$; $a_{hex} = 2.55 a_k$;
 $c_{hex} = 1.732 a_k$.
 A atoms lie in 3(a) positions at (0,0,0) and B_I in 18(f) with
 $x=2/39$, $y=7/39$, $z=1/3$, B_{II} in 18(f) with $x=17/39$, $y=1/39$
 and $z = 1/3$. Acknowledgments to Prof. G.B. Bckiy and
 Academician N.V. Belov.
 There are 7 figures and 3 Soviet references.
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On the Structural Types for Close Packed Atoms. Possible Structure
Types for the Composition AB_{12}

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni
M.V. Lomonosova (Moscow State University imeni
M.V. Lomonosov)

SUBMITTED: June 10, 1957
Card 2/2

SMIRNOVA, Nina L'vovna

"Possible Superstructures Formed by the Distribution of A and
B Atoms in the Octahedral Holes of the Hexagonal Close-Packing"

a report presented at Symposium of the International Union of
Crystallography Leningrad, 21-27 May 1959

AUTHOR: Smirnova, N. L.

SOV/70-4-1-2/26

TITLE: Possible Superstructures Arising from the Arrangements of Atoms in Close Packed Positions (Vozmozhnyye sverkhstruktury pri razmeshchenii atomov po mestam plotneyshey upakovki)

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 1, pp 13-19 (USSR)

ABSTRACT: Earlier papers examined cubic, hexagonal or mixed close packing of two sorts of atoms A and B for compositions $B:A \gg 3$ (Refs 1-4). Here arrangements are introduced, first for the composition $B:A = 3$ which is commonest. There are two basic superstructures and an indefinite number of derivatives. In each case layers are built out of cubo-octahedra; for cubic close packing (c.c.p.) these layers are plane and for the hexagonal close packing (h.c.p.) or mixed arrangements they are pleated. The second layer, built up like the first, can lie over the holes between the cubo-octahedra of the preceding layer (first type, denoted KK) or over the square sections of the cubo-octahedra (second type, denoted KK'). Derivative structures are obtained by alternating these layers.

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Possible Superstructures Arising from the Arrangements of Atoms
in Close Packed Positions

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or not (Cu_3Au). The ordering of unoccupied sites (denoted by Π) may also have to be considered; for example Bi_2MoO_6 , K_2NiF_4 and $\text{Bi}_2\text{Pd}\Pi_6$ are comparable. The KK types are first listed. Sometimes the displacements are so large that one can hardly talk of close packing (Na_3AlF_6 etc.). In the KK type, octahedra, filling the spaces between the cubo-octahedra, lie at the points of a primitive lattice. Their centres form a simple cubic structure. These octahedra are fully or partially occupied by other atoms. Each atom M is surrounded by an octahedron of Q atoms and each Q by 2, 3, 4, 5 or 6 atoms of M. For the composition MQ the structure NaCl seems the only possibility. For MQ_2 there is also only one possible packing system. Structures are listed with cubic close packing ABC, h.c.p. AB, ABAC, ABCACB and rhombohedral ABCBCACAB. 613 structures were found for this type of KK arrangement with A:B = 1:3. Further lists are given of (nK)(mK')

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Possible Superstructures Arising from the Arrangements of Atoms
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arrangements where n and m are whole numbers and $A:B = 1:3$ and also types for $B:A = 4;6;5;8;10/3;19;27$. In all 700 compounds of 90 structural types have been examined and classified. References are given for those not appearing in Structure Reports (up to Vol 13). It is concluded that:

- 1) The superstructures in both intermetallic and inorganic compounds where there are the same types of arrangements are identical.
 - 2) Tables of the possible superstructures are useful as an aid to determining structures by trial and error.
 - 3) Superstructures have a more general applicability than coordination polyhedra but not as general as structure types.
 - 4) There is a series of simple variants in the arrangements of atoms in the sites of exact close packing and very many structures can be described in such terms.
- Acknowledgments are made to Academician N. V. Belov and Professor G. B. Bokiy for their advice.

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Possible Superstructures Arising from the Arrangements of Atoms
in Close Packed Positions

There are 3 tables and 33 references, 7 of which are
Soviet, 12 international, 6 German 7 English and 1 Swedish.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni
M. V. Lomonosova (Moscow State University imeni
M. V. Lomonosov)

SUBMITTED: May 6, 1958

Card 4/4

AUTHOR: Smirnova, N. L. SOV/70-4-1-3/26
 TITLE: Possible Superstructures in the Simple Cubic Structure
 (Vozmozhnyye sverkhstruktury v prostoy kubicheskoy
 strukture)

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 1, pp 20-24 (USSR)

ABSTRACT: The simple cubic packings are examined. Structures with NaCl type superstructure and its derivatives are listed as examples, π being used to denote vacant sites, e.g. A and B sites together make up those possible: NaCl is then $A=Na_4$, $B=Cl_4$; CaF_2 is $A=Ca_4$, $B=\pi_4$; $AB=F_8$; diamond is $A=C_4$, $B=\pi_4$; $AB=C_4\pi_4$; etc. In these cases each A is surrounded by 6B and vice versa. Partial tables are also given of AB_2 and AB_3 compounds. It is found that large groups of structure types of intermetallic and inorganic compounds can be united into a few summarising hypothetical types. Definite structure types have values of their atomic coordinates near to the values in these summarising types. If the axial directions are altered or the ratios a:b:c are varied, the atomic coordinates vary regularly. Particular

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Possible Superstructures in the Simple Cubic Structure

structure types are obtained from the summarising types by removing some or other of the "partial structures" and also by making superstructures in these or other sublattices with small displacements (or without displacements) of these or of other atoms from their ideal positions. Structure types of intermetallic and inorganic compounds, in particular as regards their cationic parts, are built from the same "partial structures" with identical superstructures. The frameworks in intermetallic and inorganic compounds may be the same but in the former electrons will act as the cement and in the latter cations. The superstructures found are 1) atomic surroundings of A - 6B and of B - 6A, composition AB. NaCl type is the only possibility. 2) A-6B; B-5A + 1B; composition A_5B_6 . The B atom has more than one neighbouring B atom which is impossible. 3) A-6B; B - 4A + 2B; composition A_2B_3 . Two arrangements of A and B around B which are both impossible. 4) A - 6B; B - 3A + 3B; composition AB_2 . One superstructure possible.

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Possible Superstructures in the Simple Cubic Structure ^{SOV/70-4-1-3/26}

5) $A - 6B$; $B - 2A + 4B$; composition AB_3 . One cubic superstructure (all the others are orthorhombic). Acknowledgments are made to Academician N. V. Belov and Professor G. V. Bokiy for their advice. There are 4 figures, 3 tables and 3 references, 1 of which is Soviet, 1 Hungarian and 1 international.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 27, 1958

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24.7100

76004
SOV/70-4-5-26/36

AUTHOR: Smirnova, N. L.

TITLE: Possible Disposition of Atoms in the Octahedral Spaces of a Close-Packed Hexagonal Structure

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 5, pp 778-782 (USSR)

ABSTRACT: Let each of the X atoms that form a close-packed hexagonal structure be equally surrounded by A and B atoms, placed in the octahedral spaces of the structure. Thereby, A or B may mean an atom or a lattice vacancy. In any event, any X atom is, then, confined to the body center of a rhombohedral prism, whose vertices can be occupied by A and B in rational proportions such as 1:5, 2:4, 3:3. These ratios will lead to the compounds of AB_5X_6 or A_5BX_6 , AB_2X_3 or A_2BX_3 , and ABX_2 types respectively. At the same time, A and B can be considered to form their own structures interpenetrating one another. In the case of 1:5 ratio, the hexagonal prisms, formed by B, will have A at the body centers, but the prisms may join

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Possible Disposition of Atoms in the Octahedral Spaces of a Close-Packed Hexagonal Structure

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each other along the prism face with 0 or $\frac{1}{2}$ unit translation. Thus, two different structures will emerge. If the ratio is 2:4, A may occur along a prism edge, basal edge, or face diagonal of the rhombohedral prism. Considering the interpenetrating A and B structures, 7 possible combinations are found to lead to the three different dispositions of A; in other words, 7 structures may be formed. If the ratio is 3:3, the 3 A (or B) atoms may be confined to a basal face, prism face, or to 2 different prism faces. Here again, a number of possible combinations of the interpenetrating A and B structures may lead to the three kinds of A distribution. Thus, ABX_2 -type compounds may occur in

a number of structural varieties. The combinations are not the only possible combinations, since the A:B ratio may vary from one rhombohedral prism to the next. A number of minerals such as chromium sulfide, bismuth iodide, corundum, ilmenite, rutile, diaspore, olivine, columbite, and many others are considered to

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Possible Disposition of Atoms in the Octahedral Spaces of a Close-Packed Hexagonal Structure

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have one or another of these types of structures. Belov, N. V., and Bokiy, G. B., are acknowledged for suggestions. There are 11 figures; and 9 references, 5 Soviet, 2 Italian, 1 Japanese, 1 Danish.

ASSOCIATION: Moscow State University imeni M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova)

SUBMITTED: February 19, 1959

Card 3/3

SHILKOVA, N. L. 3-nd Chem Sci -- "Crystallochemical laws of formation of
superstructures." Mos, 1960. (Acad Sci USSR. Inst of Crystallography. Mos
Order of Lenin and Order of Labor Red Banner State Univ im M. V. Lomonosov)
(SL, 1-01, 183)

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SMIRNOVA, N.L.

Basic identity of structural types. Zhur. strukt. khim. 1 no.3:
342-345 S90 '60. (MIRA 14:1)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Crystal lattices)

BOKIY, G.B.; SMIRNOVA, N.L.

Crystallochemistry of arsenides, stibnides, and bismuthides.
Vest. mosk. un. Ser. 4: Geol. 15 no. 5:22-37 S-0 '60.
(MIRA 13:12)

1. Kafedra kristallografii i kristallokhimii Moskovskogo
universiteta.
(Arsenic compounds) (Stibnide compounds)
(Bismuth compounds)

SMIRNOVA, N.L.

Possible superlattices for N -layer line tightest packings at
n. 3. Zhur.struk'khim. 2 no.4:418-423 J1-Ag '61. (MIRA 14:9)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Crystal lattices)

SMIRNOVA, N.L.

Possible values of the coordinate x in one-parameter lattice
complexes of cubic systems. Kristallografiia 7 no.1:7-11
Ja-F '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Crystallography, Mathematical)

SMIRNOVA, N.L.; BELOV, N.V.

On two large groups of structural types corresponding to the formula.
 AX_2 . Kristallografiia 7 no.5:671-679 S-O '62. (MIRA 15:12)

1. Institut kristallografii AN SSSR i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Crystallography)

SMIRNOVA, N.L.; BELOV, N.V.

Structures from Thomson cubes with alternate bipyramidal nets having a cubic or diamond-type symmetry. Kristallografiia 7 no.6:826-834 N-D '62.
(MIRA 16:4)

1. Institut kristallografii AN SSSR i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Crystallography)

BOKIY, G.B.; SMIRNOVA, N.L.

Systematics of structural types. Part 1. Zhur.strukt.khim.
4 no.5:744-756 S-O '63. (MIRA 16:11)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

SMIRNOVA, N.L.

Determining the possible arrangement of atoms in octahedral
vacancies of n-layer very tight packings at $n \geq 3$. Kristallo-
grafiia 8 no.2:181-185 Mr-Apr '63. (MIRA 17:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

SMIRNOVA, N.L.; BELOV, N.V.

Structural group of quartz. Kristallografiia 8 no.3:346-350
My-Je '63. (MIRA 16:11)

1. Institut kristallografii AN SSSR i Moskovskiy gosudarstven-
nyy universitet imeni Lomonosova.

SMIRNOVA, N.L.

Possible superstructures in multilayer tight packings.
B-atoms have (a) 4 or 2; (b) 4 or 1 adjacent A-atoms.
Kristallografiia 9 no.2:265-267 Mr-Ap'64. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

SMI-Nova, N.I.

Isomorphism from the viewpoint of crystallochemistry. Trudy
Min. nauch. no. 15:162-166 '64. (MIRA 17:11)

SMIRNOVA, N.L.; KUNIN, M.B.; BELOV, E.V.

Fedorov group (D_{6h}^4) as a generic indicant of the family of
crystal structures. Zhur. strukt. khim. 5 no.5:719-729 S-O '64
(MIRA 18:1)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

SMIRNOVA, N.L.; GREKOVA, S.N.

Bivalent and trivalent lattice complexes of a tetragonal system
as combinations of 13 flat lattices. Vest. Mosk. un. Ser. A:
(MIRA 19:1)
Sol. 20 no. 6:75-80 N-D '65.

1. Kafedra kristallografii i kristallokhimii Moskovskogo gosudar-
stvennogo universiteta. Submitted August 4, 1964.

SMIRNOVA, N.M.; DOBRYCHENKO, A.G.

Earthquake in the Terek region. Priroda 53 no.6:116-117 '64.
(MIRA 17:6)

1. Groznenskaya seysmicheskaya stantsiya AN SSSR.

SOV/120-59-1-44/50

AUTHORS: Nakhutin, I. Ye., Smirnova, N. M.

TITLE: Production of Pure Xenon (Polucheniye chistogo ksenona)

PERIODICAL: Pribery i tekhnika eksperimenta, 1959, Nr 1, p 149 (USSR)

ABSTRACT: A method of separating the hydrocarbons present in xenon is described. The elimination of the hydrocarbons was done by employing a highly active reagent which is prepared by depositing a layer of copper oxide on a surface of silica gel. The reagent was placed in a short quartz tube (having a length of a few cm), and dehydrated at a temperature of 300°C. The tube was then heated to 700°C, and the xenon to be purified was passed through it. The device operated as a chromatographic column in that the change of colour of the reagent after the reaction permitted the observation of the front forming in the column. A preliminary filling of the column by xenon was done very slowly. Subsequently, the xenon was passed in a continuous stream, at a rate of about 10 l/cm²hr, through the heated column and through another two columns operating at the ambient temperature. The other two columns captured the carbonic acid and the water vapours which formed during the oxidation of the hydrocarbons. After the operation the column was regenerated at 600°C. By the above method it was possible to obtain a spectrally pure xenon; the lines

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SOV/120-59-1-44/50

Production of Pure Xenon

of hydrogen and oxygen could not be detected, nor were the molecular spectra of hydrocarbons present. The method can be used for the purification of other rare gases. The authors express their gratitude to N. A. Teterina for carrying out the spectral analysis. There are no figures or references.

SUBMITTED: February 15, 1958.

Card 2/2

LASKORIN, B.N.; SHIRNOVA, N.M.; GANTMAN, M.N.; VORONOVA, A.I., red.;
VLASOVA, N.A., tekhn. red.

[Ion-exchange membranes and their use] Ionoobmennye membrany ikh
primeneniye. Moskva, Gos.izd-vo lit-ry v oblasti atomnoi nauki i
tekhniki, 1961. 162 p. (MIRA 14:12)
(Ion exchange)

S/089/61/010/004/004/027
B102/B212

21.3000 (1565)

AUTHORS: Laskorin, B. N., Smirnova, N. M.

TITLE: Application of ion-exchange membranes in the hydrometallurgy
of uranium

PERIODICAL: Atomnaya energiya, v. 10, no. 4, 1961, 353-361

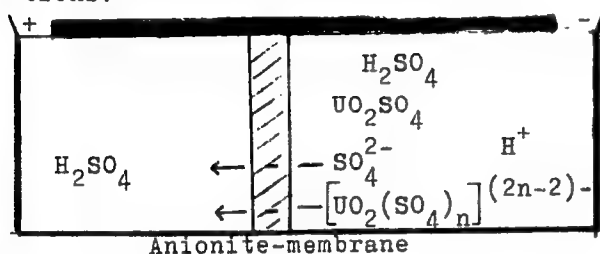
TEXT: Since large amounts of acids and alkaline solutions are consumed in standard processes of uranium sorption and extraction, the authors have applied electrodialysis with ion-exchange membranes for neutralization of acid or alkaline uranium solutions. This method has also been successfully applied to reduce U VI (from hydrochloric solutions of borate having up to 300 g/l of uranium) electrochemically to U IV. Such ion-exchange membranes (ionite membranes) promote either anion or cation diffusion (anionites, cationites). The membranes used by the authors have been delivered from the Nauchno-issledovatel'skiy institut plastmass Goskomiteta po khimii (Scientific Research Institute of Plastics of the State Committee for Chemistry) and the Moskovskiy khimiko-tekhnologicheskii institut im. D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev). Foreign-
Card 1/8

22601

S/089/61/010/004/004/027
B102/B212

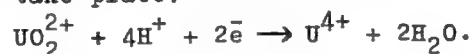
Application of ...

made membranes, such as Amberplex C-1 and A-1, Permaplex C-10 and A-10, and Nepton CR-51, CR-61 and AR-111 have also been investigated. First, the application of ion-exchange membranes is described, which are used to remove excessive acid in uranium solutions. The membranes have been tested with sulfuric, nitric, and hydrochloric solutions of uranium. Two-, three-, and twenty-chamber electrodialyzers made of organic glass and having a capacity of 30-1500 ml were used for the purpose. Platinum, tantalum, graphite, lead, and stainless steel served as material for electrodes. Work with two-chamber electrodialyzers. The following setup has been used to remove excessive acid from sulfate solutions having different uranium concentrations:

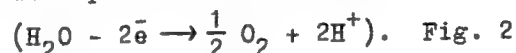


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The following reaction will also take place:



This is possible since water is decomposed at the anode



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B102/B212

Application of ...

illustrates the course of the reduction process. In addition, partial separation of uranium from iron by electrodialysis has also been made (at pH = 3-3.6). It has been found that during this process the cathode was covered with metallic iron; this method has yielded a decontamination factor for uranium from iron of about 1000. Nitric acid solution have been treated analogously (80 g of U/l and pH = 3-3.5). These tests have also been made with a two-chamber device having an anionite membrane. The average amount of energy needed to obtain 1 kg of nitric acid was less than 10 kwh.

Application of multi-chamber electrodialyzers. Multi-chamber systems (as shown in Fig. 4) permit another decrease of energy consumption which is given by $W = E(C^0 - C^1)/37.4 n \eta$ kwh/l of distillate (E denotes the voltage, η the current output, and n the number of chambers). The authors have also investigated the rules governing the transfer of certain ions through a carboxyl membrane at different molar ratios of acid and salt. Amberplex A-1 has been used in tests with pure acids containing 5-6 g of uranium/liter and 1 g-equiv/l of hydrochloric or nitric acid. A three-stage device schematically shown in Fig. 5 has been used to reduce the acid content from 1 to 0.1 g-equiv/l. For 1 N hydrochloric acid $\eta_1 = 0.37$ (first stage), for 0.7 N $\eta_2 = 0.40$, (second stage), and for 0.4 N $\eta_3 = 0.44$ (third stage), the mean

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S/089/61/010/004/004/027
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Application of ...

value of η was 0.40. The flow rate has been calculated from the formula $v = In \cdot 0.0374 / \Delta C$ l/hr, where n denotes the number of chambers (for the case in question it has been 10); ΔC denotes the difference in concentration of the incoming and outgoing starting solution (in g-equiv/l). The flow rate has been calculated to be $v = 0.230$ l/hr. Application of ionite membranes in separating uranium. Electrodeposition of uranium from sulfuric acid solutions containing ammonium sulfate. In such solutions, uranium will be deposited in the cathode part of the electrolyzer, and any excessive acid will migrate to the anode part and may be reclaimed. For this purpose, two-chamber devices with anionite and cationite membranes are used. Fig. 6 shows a diagram of such a unit with regeneration for a sulfuric acid solution. In order to deposit 1 kg of uranium for a solution with 5 g of uranium/liter, 10.4 kwh will be required at a current density of 32 ma/cm²; for the same case with 10 g of uranium/l 3.4 kwh will be required. Electrochemical deposition of uranium from desorption solutions. Here, also a two-chamber system with regeneration has been used. The catholyte has been a solution with 2.5-10.0 g of uranium/l, 0.1-0.5 N HNO₃, and 0.5-0.9 N NH₄NO₃; the anolyte has been a solution with 0.6-1 N NH₄NO₃. Current has been sent through till it had reached a pH value of 7

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Application of ...

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S/089/61/010/004/004/007
B102/B212

(in the catholyte)..In all tests, yellow, easily filterable ammonium diuranate has been deposited in the cathode part. Utilization of ionite membranes for the electrodialysis of uranium carbonate solutions: Fig. 9 shows a diagram of the layout. A basic starting solution with 0.3 g of uranium/l, 24 g of Na_2CO_3 /l, and 15.3 g of NaHCO_3 /l was in the anode part, while in the cathode part there was a 0.1 N NaOH solution (2.56 g of Na/l). The cationite membrane was pervious to Na ions, but not to U ions, and the alkaline solution could gather in the catholyte (and did not contain more than 3 mg of U/l). All tests showed that the membranes investigated are well suited for various purposes, and their application seems to be promising in the chemical technology of uranium processing. There are 9 figures and 12 references: 6 Soviet-bloc and 6 non-Soviet-bloc. The three references to English-language publications read as follows: P. Kirk USAEC RMO-2506 (1955); R. Kunin Patent USA No. 2, 832, 727, 1958 and No. 2, 832, 728; N. Frisch, USAEC RMO-2516 (1955)

SUBMITTED: October 29, 1960

Card 5/8

LASKORIN, B.N.; SMIRNOVA, N.M.

Electrochemical reduction of U(VI) to U(IV) in hydrochloric acid
solution with the use of cation exchange membranes. Atom.energ.
10 no.5:530-531 My '61. (MIRA 14:5)
(Uranium compounds) (Membranes (Chemistry))

25222

S/080/61/034/008/004/018 :
D204/D305

26.1610

AUTHORS: Laskorin, B.N. and Smirnova, N.M.
TITLE: Comparison of the physico-chemical properties of
domestically-produced and foreign ionic membranes
PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 8, 1961,
1700-1709

TEXT: The purpose of the present work is to investigate the basic properties of various membranes and compare home with foreign products. The membrane used in the experiments were domestically produced membranes based on: 1) polyethylene, e.g. cationic - KU (60%) containing 60% of KU-2 resin, and anionic - KU-3 (60%) containing 60% of basic AV-16 anionic resin; 2) "nayrit" rubber or chlorosulphonated polystyrene (KhsP), cationic - KU-3 (70%) nayrit, and KU-3 (70%) KhsP, anionic - KU-10p (65%) nayrit (on a silk base); 3) butylmethacrylate adhesive (BM) from KU-2 and KU-10p resins on glass fiber, cationic - KU-2 (50%) BM, anionic - KU-10p (50 and 70%) BM. In addition a new type of homogeneous anionic membrane has been

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25222

./080/61/034/008/004/018
0204/0305

Comparison of: the physico-chemical...

produced by combining liquid polyelectrolyte, polyethylenepolyamide, with 12.5% solution of perchlorovinyl resin in dichloroethene in a ratio of 4 : 1 solution cast into films to give A-1 membranes. Various heterogeneous membranes were also prepared by mixing finely divided ion exchange resins, e.g. KU-2, KB-4, Dauchs - 50, AM-2R, EDE-10p, JRA-400 with polystyrene or polyvinyl chloride. The following products were chosen out of the foreign membranes - Nepton CR-51, Nepton CR-61, Nepton AR-111 (homogeneous) and Amberplex C-1, Amberplex A-1, Permaplex C-10, Permaplex A-10 (heterogeneous). The tests involved determination of swellability, moisture capacity, flow capacity and electrochemical properties, all of which depend on the choice of ion exchange resin and its content in the membrane. In general the strength and elasticity of membrane decrease with an increase of the resin content while at the same time the swellability, moisture capacity and conductivity increase resulting in the reduction of selectivity. The swellability of membranes was determined by using pretreated membranes, i.e. treated with 0.1 N H_2SO_4 to convert cationic membranes to H^+ - form and anionic

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S/080/61/034/008/004/018
D204/L305

Comparison of the physico-chemical...

membranes to sulpho-form. By comparing the length "l" and thickness δ of specimens in dry and swollen states and evaluating the average ratios of $\frac{l_{\text{swollen}}}{l_{\text{dry}}}$ and $\frac{\delta_{\text{swollen}}}{\delta_{\text{dry}}}$ the relative value of the

degree of swellability in water was determined. The moisture capacity of the membranes was determined by weighing dry and swollen specimens, and was expressed by $w = \frac{p_s - p}{v_s \cdot d_0}$ where p and p_s are

corresponding weights in dry and swollen states v_s is the volume in the swollen state and d_0 - density of water. The results are given in tabulated form. The coefficient of flow capacity was measured by passing distilled water through membranes boiled in distilled water to remove air trapped in the pores, and was calculated from the following equation:

$$D = \frac{v}{A \cdot t \cdot p} \cdot 13.6 \cdot 981 \frac{\text{cm}^2 \cdot \text{sec}}{\text{g}}$$

where A is the surface of membrane, t - time necessary to pass 5 cm² of liquid and p - pressure in cm Hg. The microstructure of

Card 3/5

Comparison of the physico-chemical...

S/080/61/034/008/004/018
D204/D305

the membranes was determined by microscopic means. Since the behavior of membranes in electrolyte solutions is similar to that of granular ion exchange resins, they exhibit a specific exchange capacity. It has been established that all the ionic groups of the resin are available irrespective of the thickness of the membrane. One disadvantage of such sorbents is, however, the slow rate of establishing an ion exchange equilibrium. The most important electrochemical properties of membranes are electrical conductivity and selectivity or electrochemical activity, which is expressed as the ability of a membrane immersed in a solution to vary the transfer number of ions in an electric field. There are two well known methods of determining the number of ions transferred through membranes: 1) Determination of concentration changes in solutions surrounding the membrane and; 2) Determination of membrane potentials. The specific conductivity of membranes was measured with the use of platinum electrodes and A.C. current of 1500 cycles. The transfer number measurements showed that the electrochemical activity of all membranes was highest in dilute solution and decreased with the increased electrolyte concentration. There are 2 figures, 5 tables

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Comparison of the physico-chemical...
and 7 Soviet-bloc references.

S/080/61/034/008/004/018
D204/D305

SUBMITTED: July 19, 1960

Card 5/5

CH

SMIRNOVA, N.M., inzh.; BESSONOVA, T.A., inzh.

Methods of the spectral analysis of nickel-base alloys. Khim.
mashinostr. no.3:36-37 My-Je '63. (MIRA 16:11)

ACC HR: AFG002808 (A) SOURCE CODE: UR/0286/65/000/0286/0057/0057

INVENTOR: Laskorin, B. N.; Smirnova, N. M.; Granovskaya, A. D.

ORG: none

TITLE: Method of manufacturing ion exchange materials. Class 29,
no. 177030 /

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 57

TOPIC TAGS: ion exchange, synthetic fiber, textile, graft copolymer,
polymer, chlorine, vinyl chloride, amine, copolymer

ABSTRACT: The method of manufacturing ion exchange materials (textiles, fibers) by grafting another polymer to the initial polymer is characterized by the fact that chlorine-containing fibers and textiles such as chlorine or vinylidene chloride and vinyl chloride copolymers are used as the initial polymer, and polyethylene polyamine or other amino compounds as the second (added) polymer in order to improve the quality and increase the assortment of ion exchange materials.

SUB CODE: 11,30/ SUBM DATE: 23Apr62

Card 1/1

14-57-6-12319

A Physical and Chemical Description (Cont.)

and chemical nature, the latter resemble somewhat the lakes of the Kulunda steppe, which are of soda type in the first stage of formation.

Card 2/2

G. A. G.

SOV/33-36-2-6/27

3(1)

AUTHORS:

Baturova, G.S., Pominov I.S.,
Stolov, A.L., Smirnova, N.N.

TITLE:

Spectroscopic Observations of the Corona During the Total
Solar Eclipse of June 30, 1954

PERIODICAL:

Astronomicheskii zhurnal, 1959, Vol 36, Nr 2, pp 247-253 (USSR)

ABSTRACT:

The paper contains an evaluation of the observations of the expedition of the AOE ; position of the expedition : stanitsa Novo - Rozhdestvenskaya of the Krasnodar district, $\lambda = 2^{\text{h}}39^{\text{m}}44^{\text{s}}$ westward from Greenwich, $\varphi = +45^{\circ}53'2''$; time : June 30, 1954. The results of the evaluation of two spectrograms of the corona in visual region are given (taken by I.S. Pominov and N.N. Smirnova). The obtained spectra contain five coronal lines with the wave lengths 6375, 5303, 4312, 4232, 4087 Å . The electron density of the solar corona was calculated according to the method of A.F. Bogorodskiy and N.A. Khinkulova for $\xi = 1.05$ to 2 from the coronal component of the continuous spectrum. The decrease of the electron density with increasing ξ is somewhat slower than obtained by Bogorodskiy and Khinkulova. G.A. Shayn is mentioned. The authors thank Professor

Card 1/2

S. N. N. NOVA, N. N.

USSR,

✓ The crystallochemical study of the compound Ag_2NO_3 .
G. B. Bokil and N. N. Semkova. *Doklady Akad. Nauk*
S.S.S.R. 91, 821-823 (1963). Following abstr. — Discussion
of the earlier work on the structure of Ag_2NO_3 indicates
that the actual position of the O atoms could not be fixed
in the presence of the heavy Ag atoms. All of the Ag atoms
are assumed to possess the same valence, 2+. And the mol.
formula is explained on the basis of the presence of peroxide
ions, O_2^{2-} . In order to check the positions of the atoms,
projection diagrams of the electron d. were made. From
this it was concluded that only Ag^+ and Ag^{2+} are present.
J. Rovtar Leach

NA 02

86431

S/181/60/002/011/015/042
B006/B056

9.4300(3203,043,1143)

AUTHORS: Nasledov, D. N., ~~Smirnova, N. N.~~ and Tsarenkov, B. V.

TITLE: The Temperature Dependence of the Main Parameters of GaAs Point-contact Diodes

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 11, pp. 2762-2769

TEXT: The authors produced point-contact diodes from n-type GaAs single crystals (conductivity at room temperature: $15 - 30 \text{ ohm}^{-1} \cdot \text{cm}^{-1}$; concentration: $n_n = 5 \cdot 10^{16} - 10^{17} \text{ cm}^{-3}$; mobility: $\mu_n \approx 2000 \text{ cm}^2/\text{v} \cdot \text{sec}$), and first give a brief description of the production method. The volt-ampere characteristics of the GaAs diodes were measured within the range of $-196 - +300^\circ \text{C}$ (Figs. 1, 2), and the main parameters are given in Table 2. The oscillographic characteristics were recorded by a "characteriograph" described in Ref. 6. The direct branches of the volt-ampere characteristics are described by the empirical formula

$$I_{\text{dir}} = I_0 \left\{ \exp \left[\frac{q(U_{\text{dir}} - I_{\text{dir}} r_s)}{\beta kT} \right] - 1 \right\}. \text{ The factor } I_0 \sim \exp(-\Delta E/kT)$$

($\Delta E \approx 0.7 \text{ eV}$); β is a dimensionless factor which decreases with rising

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The Temperature Dependence of the Main
Parameters of GaAs Point-contact Diodes

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B006/B056

temperature (cf. Table 2); r_s is the internal series resistance of the diode, and U_{dir} is the direct voltage drop on the diode. The experimental results are shown in five diagrams. The direct current in the diode depends on recombination processes occurring in the volume-charge region, the base layer, and on the surface, and also on the ohmic resistance of the base layer. $I_{dir} = I_0 \exp(qU_0/\beta kT)$ and $I_{dir} \sim \exp[(\Delta E - qU_0/\beta)/kT]$, where ΔE is the activation energy. An analysis of the statistical volt-ampere characteristics in the temperature range concerned showed that: 1) the temperature dependence of the differential conductivity at U_0 , of the factor I_0 in the empirical formula for the direct current and the reverse current at $-1V$ is exponential in the range of 373-573°K; the exponents coincide; 2) β decreases with rising temperature and is greater than 2 at -196°C; 3) the section voltage decreases with increasing temperature; the temperature coefficient coincides with the temperature coefficient of the contact potential difference calculated for a symmetrical p-n junction, whereas the absolute value of U_{sec} is smaller than the calculated value of U_{calc} ; 4) at a constant voltage, the direct current rises within the range of

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The Temperature Dependence of the Main
Parameters of GaAs Point-contact Diodes

S/181/60/002/011/015/042
B006/B056

0 - 0.6 v with rising temperature. Within the range of 0.7 - 1 v it first increases, after which it drops, which is due to the temperature dependence of the internal series resistivity of the diode. There are 5 figures, 2 tables, and 9 references: 7 Soviet, 1 US, and 1 Australian.

ASSOCIATION: Fiziko-tekhnicheskii institut AN SSSR Leningrad
(Institute of Physics and Technology of the AS USSR,
Leningrad)

SUBMITTED: June 9, 1960

Таблица 2

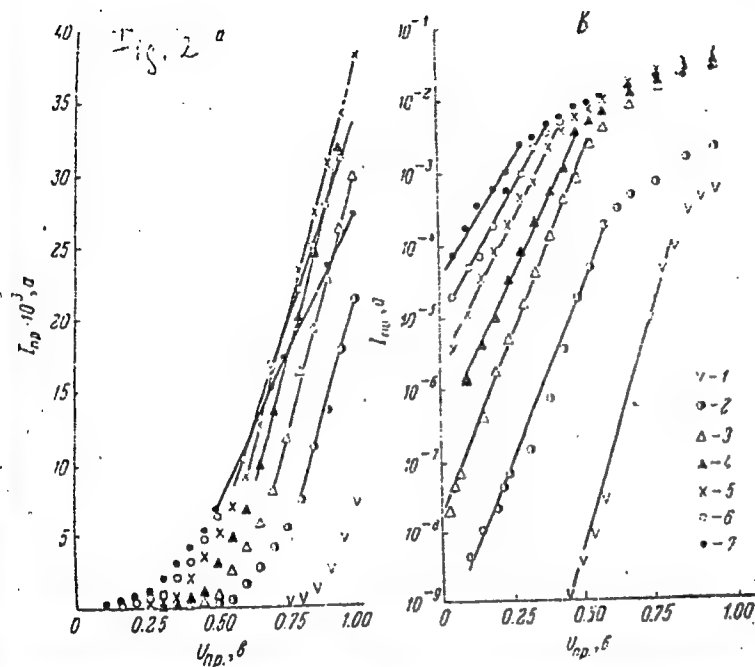
$T, ^\circ C$	I_{cs} a	β	r_s ohm l	$U_{отс.}$ a z	$I_{np. (+1 v)}$ a 3	$I_{огр. (-1 v)}$ a 4
-196	$2.5 \cdot 10^{-15}$	3.2	38	0.93	0.005	—
20	$3.6 \cdot 10^{-10}$	1.7	20	0.67	0.0185	$4.2 \cdot 10^{-8}$
300	$4 \cdot 10^{-5}$	1.55	29	0.34	0.0275	$1.8 \cdot 10^{-1}$

Legend to Table 2: 1) r_s expressed in ohms; 2) U_{sec} in v, I_{dir} at +1v in a; 3) $I_{np.}$ at +1v in a; 4) I_{rev} at -1v in a.

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S/181/60/002/011/015/042
B006/B056



Legend to Fig. 2: Direct branches of the volt-ampere characteristics of the GaAs point-contact diode No. 2 at different temperatures, on a linear (a) and a semilogarithmic (b) scale. 1) 77°K; 2) 293°K; 3) 373°K; 4) 423°K; 5) 473°K; 6) 523°K; and 7) 573°K.

Card 4/4

FILIPPOV, L.P.; YERSHOVA, N.G.; SMIRNOVA, N.N.

Changes in the properties of fluids in supercooling. Vest.Mosk.un.
Ser.3:Fiz.,astron.15 no.4:21-25 J1-Ag '60. (MIRA 13:9)

1. Kafedra molekulyarnoy fiziki Moskovskogo universiteta.
(Supercooling)

ZVEREV, L.V.; SMIRNOVA, N.N.; FILIPPOVSKAYA, T.B.

Solubility of rock-forming silicate minerals in sulfuric acid
solutions. Min.syr'e no.4:134-147 '62. (MIRA 16:4)
(Silicates) (Sulfuric acid)

L 2975-66 EWT(1)/EWT(m)/EWP(t)/EWP(b)/EWA(h) LIP(c) AT/JD
 ACCESSION NR: AP5022437 UR/0109/65/010/009/1707/1709 37
 539.293.011.41 B

AUTHOR: Nasledov, D. N.; Smirnova, N. N.; Slobodchikov, S. V.

TITLE: Current-voltage characteristics of alloy p-n-junctions in InAs

SOURCE: Radiotekhnika i elektronika, v. 10, no. 9, 1965, 1707-1709

TOPIC TAGS: current voltage characteristic, pn junction, InAs pn junction

ABSTRACT: The carrier concentration in the source n-InAs material was 5×10^{16} to $1.5 \times 10^{17}/\text{cm}^3$; Zn content in the alloy was 0.1—5%. Current-voltage characteristics were taken in the 78—296K range. At 78K, the forward-current vs. voltage characteristic showed two slopes: $\beta_1 = 1.2—1.3$ and $\beta_2 = 1.8—2.8$. Crystal-structure defects are assumed to be responsible for the high-values of β . At higher-than-room temperatures, the diffusion current describable by the regular Shockley theory prevails. The reverse-current vs temperature curve measured experimentally yields a forbidden-band width of 0.48 ev (at 0K). Orig. art. has: 2 figures and 2 formulas. [03]

Card 1/1

L 2975-66

ACCESSION NR: AF5022437

ASSOCIATION: none

SUBMITTED: 20Jun64

NO REF SOV: 001

ENCL: 00

OTHER: 001

SUB CODE: SS

ATD PRESS: 4109

BVK

Card 2/2

MARTYNOV, Yu.M.; KORNBLIT, I.I.; SMIRNOVA, N.P.; DZHAGATSPANYAN, R.V.

Determination of metal impurities in silicon tetrachloride
and silicon dioxide by the spectrochemical method.
Zav.lab. 27 no.7:839-842 '61. (MIRA 14:7)
(Silicon compounds) (Metals--Analysis) (Spectrochemistry)

L 29369-66

ACC NR: AP6019802

SOURCE CODE: UR/0239/65/051/004/0487/0494

AUTHOR: Smirnova, N. P. (Moscow); Volodin, V. M. (Moscow)

ORG: none

TITLE: Study of hypothalamic influences on coronary blood circulation

SOURCE: Fiziologicheskly zhurnal SSSR, v. 51, no. 4, 1965, 487-494

TOPIC TAGS: cat, electrophysiology, hormone, brain, pharmacology, vasopressin

ABSTRACT: The hypothalamus of anesthetized cats was irritated by means of an electric current; the tonus of coronary blood vessels was then determined by the resistography method. The reaction to the irritation most frequently consisted of contraction of the vessels, but vasodilation and two-phase reactions were also observed. Reactions of different types were obtained on irritation of the same points in the hypothalamus. Increasing the intensity of the irritation or intravenous administration of dihydroergotoxin, hexonium, or aminazine often changed the nature of the reaction upon irritation of the same point. After application of aminazine or hexonium, a predominance of pressor reactions was observed. The effect of the hypothalamus on coronary vessels was not eliminated after exclusion of the influence of vascular innervation by section of the spinal cord or of the midbrain or application of pharmacological agents. This indicated that the effect of

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UDC: 612.826+612.172.1

ACC NO: 111-1/111(1) SOTS DD/GD
111-1/111(1)

SOURCE CODE: UR/0000/66/000/000/0205/0206

AUTHOR: Alimovskaya, L. D.; Smirnova, N. P.; Poleshchuk, A. T.

NOTE: none

TITLE: Cerebellar reaction to afferent stimulation during accelerations [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 11-13 July 1966]

SYNOPSIS: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 206-208

TOPIC TAGS: space physiology, biologic acceleration effect, central nervous system, electroencephalography, cerebellum, rat

ABSTRACT: The stabilizing function of the cerebellum depends on the qualitative and quantitative nature of afferent impulsation and the ability of neuron systems to adequately digest incoming information. One approach to the study of this problem is to evaluate the reaction of the cerebellum to ordinary afferent signals.

An evoked potential method was used in the study. Tests were conducted on white rats exposed to transverse accelerations (10 G for 4 min). The evoked potentials were responses to individual stimuli administered to the sciatic nerve. Square pulses with a duration of 0.5 msec were administered via a steel needle through the bone of the Culmen monticuli area. Potentials were recorded before, during, and after acceleration by means of a "Disa" universal gauge and a preamplifier on an "Alvar" electroencephalograph.

Electrical responses to sciatic nerve stimuli were recorded in rats.

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ACC NR: AT6036581

anesthetized with nembutal. These responses took the form of two-phased, negative-positive oscillations with latent periods of 25.2 ± 1.4 msec. Occasionally, spike discharges were recorded before the negative phase or during its descending phase.

Accelerations caused changes in the amplitude and form of the evoked potential both during and up to 10 minutes after exposure. These changes were reflected in a decrease in response to threshold stimulus, a decrease in the amplitude of the negative phase up to its complete disappearance, and intensified spike discharges. From the data it can be seen that acceleration (10 G), which is well tolerated by rats and does not affect their general condition, causes substantial changes in the function of cerebellar afferent systems. The logical conclusion might be that during the action of spaceflight factors, transition to weightlessness is accompanied by a disruption of adequate perception of afferent impulses by the cerebellar cortex. This could be of considerable concern relative to the disruption of cerebellar mechanisms. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: COMay66

Card 2/2

SMIRNOVA, N.P. (Moskva); VOLODIN, V.M. (Moskva)

Analysis of hypothalamic effects on coronary blood circulation.
Fiziol.zhur. 51 no.4:487-494 Ap '65. (MIRA 18:6)

NESTERENKO, G.V.; SMIRNOVA, N.P.

Ratio of chromium and vanadium as prospecting indications for Noril'sk
differentiated trap rocks. Dokl. AN SSSR 154 no.6:1361-1363 F '64.
(MIRA 17:2)

1. Institut geokhimii Sibirskogo otdeleniya AN SSSR. Predstavleno aka-
demikom D.I.Shcherbakovym.

SMIRNOVA, N.P.

Self-ignition of porous fiberboard. Sbor. rab. pozh.-ispyt. sta.
no.3:76-77 '63. (MIRA 17:7)

1. Leningradskaya pozharno-ispytatel'naya stantsiya.

FAYBISHENKO, A.D.; SMIRNOVA, N.P.

Fire hazards and preventive measures in the production of
epoxy resins. Sbor. rab. pozh.-ispyt. sta. no.3:39-49 '63.
(MIRA 17:7)

1. Leningradskaya pozharo-ispytatel'naya stantsiya.

A

11F

Retardation of sexual cycle by chemical block of thyroid with methylthiouracil. P. A. Vunder, N. P. Smirnova, and R. I. Lichman (N. G. Chernyshevskii State Univ., Saratov). *Doklady Akad. Nauk S.S.S.R.* 72, 1203-6 (1950).—Feeding of methylthiouracil (best 20-60 mg. daily) leads to a lengthening of the estral cycle of female rats by a factor of 2-3 (30-40-day cycle), especially noted at 50-60-mg. dosage; at 20-mg. dosage the effect is weak. A rapid return to normal occurs on stoppage of the drug. Thyroidectomy gives a similar but usually less defined effect.

G. M. Kosolapoff

SMIRNOVA, N. P.

✓ Changes in the synthesis and transamination of amino acids in the liver of rats in protein deficiency. N. N. Berezhovskaya and N. P. Smirnova (Inst. Biol. and Med. Chem., Acad. Med. Sci. U.S.S.R., Moscow). *Biokhimiya* 21, 457-60 (1960).—White rats were kept on a diet containing 3% protein (C.A. 40, 3174*) until they lost 25-30% in wt., developed symptoms of hypoproteinemia, and showed a reduced uric urea content. They were then killed and the rate of synthesis of amino acids in the liver studied. Sections of the liver were incubated in a bicarbonate buffer (pH 7.4) in an atm. of 95% O₂ + 5% CO₂ at 37° with different keto acids. The synthesis of alanine, and glutamic and aspartic acids from the corresponding keto acids in liver sections of these rats fed protein-poor diets was considerably changed. Disturbances in the synthesis and transamination in transamination system involving alanine and ketoglutaric acids appeared 4-5 days after the animals had been placed on the protein-poor diet, and at a later period in the trans-

amination system involving aspartic and ketoglutaric acids.
B. S. Levine

Lab. Phys. Chem.

SMIRNOVA, N. P.

Changes in the synthesis and transamination of amino acids in the liver of rats in protein deficiency. N. N. Berezovskaya and N. P. Smirnova. *Biochemistry (U.S.S.R.)* 21, 463-9(1956)(English translation).—See *C.A.* 51, 3765a. B. M. P.

GURVICH, A.Ye.; SMIRNOVA, N.P.

Changes in the content of antibodies and the intensity of the incorporation of glycine labeled with radioactive carbon into antibodies following immunization of animals with two antigens [with summary in English]. Biokhimiia 22 no.4:626-635 J1-Ag '57.
(MIRA 10:11)

1. Laboratoriya fiziologicheskoy khimii Instituta biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR, Moskva.

(ANTIGEN AND ANTIBODY REACTION,

antibody level & inclusion of radiocarbon labeled glycine after immun. with 2 antigens (Rus))

(GLYCINE, metabolism,

radiocarbon labeled, inclusion into antibodies after immun. of animals with 2 antigens (Rus))

SMIRNOVA, N.P.

Changes in the character of certain vegetative reactions in connection with the action of ionizing radiations [with summary in English].

Med.rnd. 3 no.3:3-9 My-Je '58

(MIRA 11:7)

(ROENTGEN RAYS, eff.

on vasc. reaction after hypothalamus stimulation in rabbits

(HYPOTHALAMUS, physiol.

eff. of stimulation on vasc. reaction of rabbits after total-body x-irradiation (Rus))

(BLOOD VESSELS, physiology

eff. of thalamic stimulation after total-body x-irradiation in rabbits (Rus))

LEBEDINSKIY, A.V.; NAKHIL'NITSKAYA, Z.N.; SMIRNOVA, N.P.

Participation of the autonomic nervous system in the organism's
reaction to ionizing radiation. Med.rad. 4 no.7:3-9 J1 '59.
(MIRA 12:9)

(AUTONOMIC NERVOUS SYSTEM, physiol.)
(RADIATION EFFECTS)

MOROZ, B.B.; SMIRNOVA, N.P.

Effect of Po^{210} on the organism. Med.rad. 4 no.9:66-74
S '59. (MIRA 12:11)
(POLONIUM eff inj)

SMIRNOVA, N.P. (Moskva)

On the functional state of the hypothalamic region following total
roentgen irradiation. Biul.eksp.biol.1 med. 48 no.9:38-42 S '59.

(MIRA 13:1)

1. Predstavlena deystvitel'nyy chlenom AMN SSSR V.V. Parinym.
(HYPOTHALAMUS radiation eff.)

LEBEDINSKIY, A.V.; KLIMOVSKAYA, L.D.; NAKHIL'NITSKAYA, Z.N.;
SEDOV, V.V.; SMIRNOVA, N.P.

Effect of Y^{90} on the nervous system in connection with the
possibility of its use in experiments and in neurosurgical practice.
Vop. neurokhir 24 no. 2:9-12 Mr-Sp '60. (MIRA 14:1)
(YTTRIUM--ISOTOPES) (BRAIN)

SMIRNOVA, N. P., kand. med. nauk (Moskva)

Hypothalamic and pituitary disorders following use of ionizing radiations. Probl. endok. i gorm. no.6:15-19 '61. (MIRA 14:12)

1. Nauchnyy rukovoditel' - deystvitel'nyy chlen AMN SSSR prof. A. V. Lebedinskiy.

(RADIATION--PHYSIOLOGICAL EFFECT)
(HYPOTHALAMUS)
(PITUITARY BODY)

SMIRNOVA, N.P. (Moskva)

Mechanisms of hypothalamic regulation of cardiac activity.
Fiziol.zhur. 47 no.2:185-190 F '61. (MIRA 14:5)
(HEART) (HYPOTHALAMUS)

27.1220

10470

S/205/62/002/002:003/015

1020/1215

AUTHOR: Smirnova, N. P.

TITLE: The significance of central vegetative regulation disorders during exposure of the cardiovascular system to ionizing radiation

PERIODICAL: Radiobiologiya, v. 2, no. 2, 1962, 228-233

TEXT: Vascular and myocardial reactions to radiation were studied previously. The present study deals with the changes in the hypothalamic pressor effect following irradiation. Experiments were performed on 33 male rabbits irradiated with 800 r and 1000 r. Electrical stimulation of the hypothalamic region before irradiation by inserted electrodes generally caused an increase in blood pressure. This was also observed in irradiated animals. During the early stage of radiation sickness the pressure reaction was even greater than in non-irradiated animals, while the stimulation threshold did not change. The cardiovascular reaction of irradiated animals showed a subsequent decrease in excitability of various hypothalamic regions and variation of the stimulation threshold. This indicates adaptation disorders of the cardiovascular system during radiation sickness. There are 2 figures and 3 tables.

SUBMITTED: August 2, 1962

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X

SELENNOVA, N.P. (Moskva)

State of the central vegetative regulation of cardiac activity in
irradiated animals. Pat.fiziol.i eksp.terap. 6 no.2:18-22 Mr-Apr '62.
(MIRA 15:8)

(RADIATION--PHYSIOLOGICAL EFFECT) (HEART) (HYPOTHALAMUS)

SMIRNOVA, N.P.

Involvement of the vegetative centers of the cerebellum in the reaction to the effect of ionizing radiation. Radiobiologia 4 no.4:536-540 '64.

(MIRA 17:11)

1992
S/181/62/004/006/048/051
B108/B138

247000

AUTHORS:

Bursian, E. V., and Smirnova, N. P.

TITLE:

Monocrystalline BaTiO_3 layers grown from melt in an oxygen atmosphere

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1675 - 1676

TEXT: A new technique of growing monocrystalline BaTiO_3 layers is presented. A layer of BaTiO_3 powder on a platinum backing is kept at $1600 - 1700^\circ\text{C}$ in an oxygen atmosphere for 1 - 2 min. When the melt is removed from the heated zone of the furnace, it will form either a monocrystalline layer or a layer consisting of several large monocrystalline blocks. The platinum backing can then serve as one electrode. The other can be applied as a silver paste etc. The crystals obtained are cubic and turn into the ferroelectric tetragonal phase when cooled below their Curie point. Preliminary measurements gave a dielectric constant of 4000 - 6000 at 20°C , 50 cps on a 20 μ thick specimen. The dielectric constant decreases as the thickness of the specimens is reduced. At the same time the hysteresis loop becomes more

Card 1/2

BURSIAN, E.V.; SMIRNOVA, N.P.

Production of crystalline blocks of BaTiO_3 from the melt in an
oxygen atmosphere. Kristallografiia 8 no.5:799-800 S-O '63.
(MIRA 16:10)

1. Leningradskiy gosudarstvennyy institut im. A.I.Gertsena.

L 20373-65 EWT(1)/EPA(s)-2/EWP(e)/EWT(m)/EPF(n)-2/EPA(w)-2/EEC(t)/
T/EEC(b)-2/EWP(b)/EWA(h)/ Pab-10/Pt-10/Peb/Pu-4 IJP(c)/ASD(a)-5/
SSD/AFWL/AS(mp)-2/AFMD(t)/AFETR/RAEM(j)/ESD(dp)/ESD(ss)/ESD(t) G3/VR
ACCESSION NR: APL039674 S/0181/64/006/006/1818/1820

AUTHOR: Bursian, E. V.; Safranova, N. P.

TITLE: Nonlinear capacitance of thin single crystal films of BaTiO₃ ¹⁵ B

PLACE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1818-1820

TOPICS: polarity reversal, capacitance, single crystal, dielectric constant, polarization, ferroelectric, nonlinear capacitance

ABSTRACT: This is a continuation of a whole series of papers (by various authors) devoted to the investigation of polarity reversal in thin films of BaTiO₃. The authors have extended the range of thickness of single BaTiO₃ crystals that may be investigated for determining the geometrical effect. They have found that nonlinear polarization is preserved as the thickness is diminished from 100 to 1 micron, but that the activation field of the nonlinear part increases proportionally to the reciprocal of the thickness. In rather strong fields the temperature dependence of the dielectric constant is preserved, as are the other features of ferroelectricity. These results confirm the view that the surface layer plays a

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ACCESSION NR: AP4039674

decisive role in the mechanism of polarization. It is pointed out that complete polarization at saturation proves to be no less for thin layers than for thick, and it may even be greater. A value of $2.5 \text{ microcoulombs/cm}^2$ was obtained for a thickness of 6 microns and of only $2 \text{ microcoulombs/cm}^2$ for a thickness of 30 microns. Orig. art. has: 3 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut im. A. I. Gertsena (Leningrad State Pedagogical Institute)

SUBMITTED: 17Jan64

ENCL: 00

SUB CODE: SS, EM

NO REF SOV: 004

OTHER: 005

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